



(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 735 717 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
28.04.1999 Bulletin 1999/17

(51) Int Cl.⁶: **H04L 7/08, H04L 7/04,
H04J 3/06, H04L 7/06,
H04L 25/49, H04L 5/04**

(43) Date of publication A2:
02.10.1996 Bulletin 1996/40

(21) Application number: **96301907.0**

(22) Date of filing: **20.03.1996**

(84) Designated Contracting States:
DE ES FR GB IT

• **Mazo, James Emery**
Fair Haven, New Jersey 07704 (US)

(30) Priority: **30.03.1995 US 413678**

(74) Representative: **Johnston, Kenneth Graham et al**
Lucent Technologies (UK) Ltd,
5 Morningside Road
Woodford Green Essex, IG8 OTU (GB)

(71) Applicant: **AT&T IPM Corp.**
Coral Gables, Florida 33134 (US)

(72) Inventors:
• **Gelblum, Ehud Alexander**
New York, New York 10003 (US)

(54) Timing recovery in a network-synchronized modem

(57) A timing technique for a Quantization-Level-Sampling (QLS) modem puts timing information in a downstream pulsed signal transmitted from the public switched telephone network (PSTN) to the QLS modem. In response to this timing information, the QLS modem synchronizes to the network sampling clock in the PSTN. In particular, the pulsed signal includes data-

bearing samples, which were provided by a far-end QLS modem, and at least one non-user-data-bearing (NUDB) sample in which the level of this NUDB sample periodically alternates. The QLS modem extracts timing information from this periodic alternating signal level to synchronize the QLS modem to the network sampling clock.

EP 0 735 717 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 30 1907

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 4 868 850 A (KAKU TAKASHI ET AL) 19 September 1989 * column 1, line 8-14 * * column 2, line 46 - column 3, line 3 * * column 6, line 57 - column 7, line 16 * * column 8, line 18-31 * * column 8, line 56-65 * * column 9, line 48 - column 10, line 64 * * column 17, line 10-47 *	1-3,7	H04L7/08 H04L7/04 H04J3/06 H04L7/06 H04L25/49 H04L5/04
X	PATENT ABSTRACTS OF JAPAN vol. 008, no. 226 (E-272), 17 October 1984 & JP 59 107673 A (NIPPON DENSHIN DENWA KOSHA), 21 June 1984 * abstract *	1,7	
A	GB 2 275 398 A (FUJITSU LTD) 24 August 1994 * page 1, line 6-16 * * page 3, line 8-24 * * page 9, line 16 - page 10, line 10 *	4,5,8,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H04L H04J
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		5 March 1999	Traverso, A
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03 82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 96 30 1907

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-03-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4868850	A	19-09-1989	JP 1893309 C	26-12-1994
			JP 6014627 B	23-02-1994
			JP 61278219 A	09-12-1986
			AU 567637 B	26-11-1987
			AU 5824886 A	08-01-1987
			CA 1246260 A	06-12-1988
			DE 3689292 D	23-12-1993
			DE 3689292 T	03-03-1994
			EP 0204308 A	10-12-1986
GB 2275398	A	24-08-1994	JP 6244879 A	02-09-1994
			US 5537437 A	16-07-1996

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

This Page Blank (uspto)